

APC LSR ifw A

Approved for use through 07/31/2006. PTO/SB/21 (02-04) OMB 0651-0031  
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<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	09/879,928	
	Filing Date	06/14/2001	
	First Named Inventor	C. Ward Trussel, Jr.	
	Art Unit	2815	
	Examiner Name	Warren, Matthew E.	
Total Number of Pages in This Submission	21	Attorney Docket Number	NVL 3247

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input checked="" type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
<b>Remarks</b> Rule 183 Petition with Exhibits A, B, C, D		

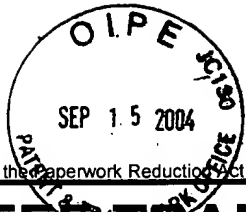
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Arthur K. Samora, Reg. No. 43, 079
Signature	
Date	09/09/2004

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.			
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This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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# FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ ) 130.00

## Complete if Known

Application Number	09/879,928
Filing Date	06/14/2001
First Named Inventor	C. WARD TRUSSELL JR.
Examiner Name	WARREN, MATTHEW E.
Art Unit	2815
Attorney Docket No.	NVL 3247

## METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 19-2201  
Deposit Account Name: ARMY MATERIAL COMMAND

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) or any underpayment of fee(s)

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## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1)					(\$ ) 0.00

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

	Extra Claims	Fee from below	Fee Paid
Total Claims	-20** =	X	
Independent Claims	-3** =	X	
Multiple Dependent			

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	86	2201	43	Independent claims in excess of 3	
1203	290	2203	145	Multiple dependent claim, if not paid	
1204	86	2204	43	** Reissue independent claims over original patent	
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent	
SUBTOTAL (2)					(\$ ) 0.00

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex parte reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	130.00
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ ) 130.00

## SUBMITTED BY

(Complete (if applicable))

Name (Print/Type)	ARTHUR K. SAMORA	Registration No. (Attorney/Agent)	43, 079	Telephone	703-704-2227
Signature	<i>Arthur K. Samora</i>	Date	09/09/2004		

**WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: C. Ward Trussell, Jr. )  
Serial No.: 09/879,928 ) Examiner Matthew E. Warren  
Filed: June 14, 2001 ) Art Unit 2815  
Title: DIODE ARRAY END PUMPED SLAB ) Attorney Docket No. NVL-3247  
LASER )

**PETITION UNDER RULE 183**

Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir,

For the above-captioned application, Applicant respectfully petitions for waiver of the fee as set forth in 35 CFR 1.17(a) for an extension of time of three months under 35 CFR 1.136(a) to respond to an Official Action, for reasons as set forth below.

**Background of This Petition**

Applicant received an Office Action dated March 15, 2004 for the above-titled patent application, with a shortened statutory period of three months for reply. Please see Office Action Cover Sheet, Exhibit A.

In response, Applicant conducted an Examiner Interview on April 29, 2004, to discuss some amendments that might possibly overcome the prior art. Please see Interview Summary and Continuation Sheet, Appendix B.

Applicant subsequently filed a Rule 111 Amendment and Reply via facsimile on May 12, 2004, within the three-month shortened statutory period for reply. The Amendment is attached as an Exhibit C, along with the Certification of Transmission and local facsimile machine confirmation sheet. The Certification of Transmission was properly executed and all 11 pages of the Amendment and Reply were transmitted.

The Rule 111 Amendment was faxed to (571) 273-1664. Although Applicant is not certain, Applicant believes that this fax number was given to Applicant during the April 29, 2004 interview with Examiner Warren, as this number is not given in the Official Action.

The fax number is for the facsimile machine of Examiner Warren's Supervisory Patent Examiner.

MPEP 502.01 states that office personnel that inadvertently receive official correspondence should route the number to the official correspondence number or, with Applicant's permission, enter the facsimile transmission as an Examiner's Amendment.

During the last week of August 2004, Applicant contacted Examiner Warren to determine the status of the patent application, and was told by Examiner Warren that no Amendment and Reply from Applicant had been received.

After learning that no Amendment and Reply have been recorded and received yet by the USPTO, Applicant re-transmitted the Rule 111 Amendment to the central fax number listed in the Office Action, (703) 872-9306, along with an updated Certificate of Transmission. The Certificate of Transmission is attached as Exhibit D.

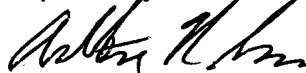
### Summary

Based on the above Background, Applicant believes that because Applicant initially

responded within the 3 month shortened statutory period in good faith, waiver of the 3-month extension fee required by 35 CFR 1.17(a) for a three-month extension of time should be waived. If it is believed that personal communication will expedite this Petition, Applicant's Representative invites a telephone call to the number provided below. Prompt and favorable consideration of this Rule 183 Petition is respectfully requested.

Dated: September 8, 2004

Respectfully submitted,



Arthur K. Samora, Reg. No. 43079  
Department of the Army  
CECOM Legal, Fort Belvoir Division  
AMSEL-LG-C-BLVR  
10235 Burbeck Road  
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(703) 704-2227



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: C. Ward Trussell, Jr. )  
Serial No.: 09/879,928 ) Examiner Matthew E. Warren  
Filed: June 14, 2001 ) Art Unit 2815  
Title: DIODE ARRAY END PUMPED SLAB ) Attorney Docket No. NVL-3247  
LASER )

**RULE 111 AMENDMENT AND REPLY**

Mail Stop ~~Non-Fee~~ Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir,

In response to the Office Action dated March 15, 2004, and pursuant to an Examiner Interview conducted April 29, 2004, Applicant responds in the following format:

- (A) Each section begins on a separate sheet;
- (B) Starting on a separate sheet, a complete listing of all claims:
  - In ascending order;
  - With status identifiers; and
  - With markings in the currently amended claims;
- (C) Starting on a separate sheet, the Remarks.

It is not believed that extensions of time or fees for net addition of claims are required. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefore (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 19-2201.

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing of claims in the application.

1. (currently amended) A diode [array end] pumped multiple mode slab laser comprising:

a laser diode [having at least one diode bar] for providing diode laser pump light in a vertical and horizontal direction to [the] an optical axis, and over a wide range of temperatures, said diode laser pump light having a pump light wavelength, said laser diode being installed in said laser without a temperature control system so that said pump light wavelength varies according to temperature;

a first cylindrical lens for collimating said diode laser pump light in said vertical direction on said optical axis [after said laser diode bar];

a second cylindrical lens on said optical axis perpendicular to and after said first cylindrical lens for collecting said diode laser pump light [output] from said first cylindrical lens [and] for further focusing [onto] into a laser cavity [as focused laser pump light];

said laser cavity on said optical axis after said second cylindrical lens, and comprising a laser slab of solid state crystal with a length and polished input and output ends, and further having a rectangular cross-section with rough ground top and bottom surfaces and polished side surfaces, [the] said laser slab accepting as input said [focused] diode laser pump light at said polished input end with unabsorbed diode laser pump light being reflected within the laser slab off [the] said polished side surfaces [and outputting from said polished output end absorbed laser energy, whereby laser pump light remains collimated in said vertical direction throughout said laser slab and said pump light further includes laser mode overlap] for [focused laser] efficient pump light absorption along all of said laser slab length and multiple mode lasing as said pump light wavelength varies according to temperature, said polished output end outputting absorbed laser energy.

2. (currently amended) The diode [array end] pumped multiple mode slab laser of claim 1 wherein said laser cavity further includes a Q-switch having input and output ends on the optical axis, with dichroic coatings at said input and output ends, said Q-switch for producing peak power pulses.

3. (currently amended) The diode [array end] pumped multiple mode slab laser of claim 1 wherein said laser cavity further includes a non-linear crystal to produce additional wavelengths.

4. (currently amended) The diode [array end] pumped multiple mode slab laser of claim 1 wherein there is further included a non-linear crystal after said laser cavity on the optical axis [for] to produce additional wavelengths.

5. (currently amended) A [diode array end pumped multiple mode slab] lasing technique for generating a laser beam over a wide range of temperatures using diode pump light, said technique comprising the steps of:

providing a laser diode without a temperature control system;

generating said diode laser pump light in a vertical and horizontal direction to the optical axis with [a] said laser diode, said diode pump light having a pump light wavelength that varies according to temperature;

collimating said diode laser pump light in said vertical direction with a first cylindrical lens;

[providing a laser slab having a length, an input end, an output end, and a rectangular cross-section with a top surface, a bottom surface and opposing side surfaces; polishing said [input end, said output end and] said side surfaces; ]

receiving said laser pump light from said first cylindrical lens with a second cylindrical lens positioned between said first cylindrical lens and said laser slab; [and,]

affording a laser slab having a length, an input end, an output end, and a rectangular cross-section with a top surface, a bottom surface and opposing side surfaces;



polishing said side surfaces; and,

focusing said laser pump light [onto] into said input end with said second cylindrical lens so that said laser pump light remains collimated perpendicular throughout said laser slab, and further so that said laser pump light reflects off said side surfaces throughout said length of said laser slab to allow for more efficient lasing in multiple modes as said diode pump light wavelength varies according to temperature.

6. (currently amended) A end diode pumped multiple mode slab laser adapted to operate over a wide range of temperatures comprising:

at least one diode bar for providing diode laser pump light in a vertical and horizontal direction to the optical axis, said diode laser pump light having a pump light wavelength, said diode bar being included in said laser without a temperature control system so that said pump light wavelength varies according to temperature;

a first cylindrical lens for collimating said diode laser pump light in said vertical direction on said optical axis after said laser diode bar;

a second cylindrical lens on said optical axis perpendicular to and after said first cylindrical lens for receiving said diode laser pump light from said first cylindrical lens for further direction into a laser slab; [and,]

said laser slab having a length and polished input and output ends, and further having a rectangular cross-section with rough ground top and bottom surfaces and polished side surfaces to establish laser mode overlap and laser pump light absorption along all of said length; and,

said side surfaces reflecting pump light back into said laser slab to allow for more efficient lasing in multiple modes as said pump light wavelength varies according to temperature.

## **REMARKS**

In the above-captioned Final Office Action, the Examiner has rejected Claims 1-6 under 35 U.S.C. §112, first paragraph, as being non-enabling. The Examiner has further rejected Claims 1-6 under 35 U.S.C. §103(a) for being unpatentable over the Fields et al. reference, when further considered in view of the Marchitto et al. and Robertson references.

In response, independent claims 1, 5 and 6 have been amended to recite a diode pumped laser with a laser diode that does not include a temperature control system, and with a laser slab having a rectangular cross-section with polished side surfaces. The polished side surfaces of the laser slab compensate for the varying pump light wavelength of the device by reflecting diode pump internally throughout the length of the laser slab. This configuration ensures laser mode overlap throughout the entire length of the laser slab, which further allows the device to operate efficiently over a wide range of temperatures, even though the diode pump light wavelength varies according to temperature. Claims 2-4 have been amended to correct informalities and to properly depend from amended independent claim 1. Support for these amendments is found in the specification on page 1, lines 18-21, on page 2, lines 18-23, on page 4, lines 3-5 and in Figs. 1-2. Claims 1-6 remain pending.

### **Rejections Under 35 U.S.C. §112, First Paragraph**

In an Examiner Interview on April 29, 2004, Applicant pointed out support for the proposed claim limitation of a laser slab having a rectangular cross-section in the specification to the Examiner, and the Examiner agreed that the specification was enabling. Accordingly, Applicant requests that this rejection be withdrawn.

### Rejections Under 35 U.S.C. §103(a)

With respect to the rejections of Claims 1, 5 and 6, consider the overall goal of Applicant's invention. What is desired is a lightweight laser that efficiently converts pump light into an output laser beam with over a wide range of temperatures (see Page 1, Lines 16-22) as the present invention is to be used as a handheld laser rangefinder that must operate in extreme cold and extreme heat conditions. To address the weight issue, diode bars (which are the most lightweight manner of generating laser pump light) are used to generate the laser pump light. But for diode pumped lasers, the pump light wavelength varies according to temperature. A temperature control system for keeping the wavelength of the diode constant is not feasible because of the weight it would add to the device. Thus, amended claims 1, 5 and 6 call for a diode pump without a temperature control system, and the cooperating structure of the device must compensate for the resulting varied pump light wavelength of the laser diode pump.

The structure and geometry of the laser slab and the first and second cylindrical lenses that is recited in amended claims 1, 5 and 6 compensate for this varying pump light wavelength. Specifically, a laser slab with a rectangular cross section and polished sides is used, and the laser pump light is collimated in a vertical direction with a first lens and then directed into the slab with the second lens. The cross section geometry and polished side surfaces of the slab allow for laser pump light to be reflected internally along the entire length of the laser, for increased pump light absorption within the crystal along the entire length of the laser slab (Page. 4, lines 4-9). This configuration ensures that most of the pump light is absorbed, even if the absorption coefficient is low, resulting in a multiple mode laser that will operate efficiently over a wide temperature range (without a temperature control system for the diode pump) even as the laser diode pump wavelength varies.

In contrast to Applicant's invention as recited in amended independent claims 1, 5

and 6, Fields et al. discloses a laser rod 8 with a laser mode 10 concentric thereto, and not a laser slab with a rectangular cross-section, like Applicant's invention (Col. 5, Lines 35-40 and Col. 6, Line 13). Of course, since the lasing material is a rod, there are no opposing side surfaces for laser pump light to reflect off of. Indeed, the recited structure of the Field et al. reference is such that laser pump light remains confined within mode 10 and never touches the inside surface of the laser rod. This is because the Fields et al. reference is directed at obtaining a highly efficient laser output beam for diode bar pump light at a single mode, the single TEM<sub>00</sub> mode (See Fields et al. Abstract), and not at multiple modes according to the diode laser pump light wavelength (which, again, varies widely with temperature). This is because Fields et al. is directed at using a plurality of diode bars and a microlens array to couple the laser pump light from each diode bar and create an high power output laser beam with minimum loss of power. The device recited in Fields does not have to operate over a wide temperature range, so there is no discussion or teaching of the structure recited in Applicant's amended claims 1, 5 and 6.

Similarly, Marchitto et al. discloses a laser pump-cavity 18 containing a laser rod 20 and a flashlamp 22 supported therein (Please see Col. 22, Lines 1-9 and Fig. 3), and not a slab/bar with a rectangular cross-section. Moreover, the only finish envisioned for any surface for the rod is a matte finish, not a polished surface. Moreover, Marchitto et al. describes alternate configurations for the matte finish 20 (See Col 22, Lines 41-64 and Figs. 13-15). However, Marchitto et al. does not even remotely address the need for a laser slab having a rectangular cross-section and/or polished opposing sides to compensate for varying diode pump light wavelength. The Marchitto et al. reference does not teach or suggest a laser slab with a rectangular cross-section and polished sides, because this structure is not needed. This is because the Marchitto et al. device is directed at medical applications, specifically interstitial fluid monitoring, hence, there is no need for the device to work over a wide range of temperature and varying pump light wave lengths. Thus, combining the Marchitto et al. reference with the Fields et al. reference does not lead to the present invention recited amended claims 1, 5 and 6.

With respect to the Robertson reference, this reference is directed at heat removal from flashlamp pumped lasers (Col. 1, Lines 36-40), which create more waste heat relative to differently-pumped lasers such as Applicant's diode-pumped laser. The Robertson reference teaches roughening the side surfaces of the laser bar to dissipate waste heat from a laser slab by reducing the transverse temperature gradient across the width of the laser crystal cross section invention (Please see Col. 1, Lines, 36-40, Col. 4, Lines 16-30 and Fig. 1). Applicant discloses polished side surfaces of the laser slab, to reflect diode pump light back into the laser slab, in order to retain as much pump light energy as possible for more efficient lasing along the entire length of the slab. Thus, the Robertson reference actually teaches away from Applicant's claimed invention as recited in the amended independent claims.

Further, and unlike Applicant, Robertson discloses a temperature control system for the pump light source, flashlamp 8. Specifically, Robertson discloses contoured sapphire blocks 9 in contact with the flash lamp 8, which contact blocks of high conductivity matter 10, which in turn contact heat sink 11 (Please see Col. 3 Line 61 through Col. 4, Line 5). Applicant's invention as recited in amended independent claims 1, 5 and 6 recites structure and cooperation of structure (the laser diode, lenses and laser slab structure) that obviate the need for this supporting temperature control system.

In sum, the Robertson reference is directed at reducing temperature gradients in the laser crystal for a flash lamp pumped laser, with the pump light source having a fairly complex temperature control system. Applicant's invention is directed at compensating for the varying pump light wavelength for a diode-pumped laser when the laser diode is not accompanied by a temperature control system due to weight considerations. Thus, there is no incentive to combine the flash lamp-pumped system of Robertson with either of the diode-pumped systems of Fields et al. and/or Marchitto et al. references, and any combination thereof still does not lead to the claimed invention in amended independent

claims 1, 5 and 6.

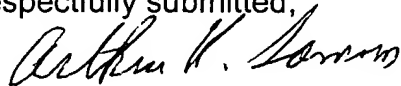
For the above reasons, the rejection of claims 1-6 is improper, and amended independent claims 1, 5 and 6 are patentable over any combination of Fields et al., Marchitto et al. and Robertson. Dependent claims 2-4 contain the same limitations as amended independent claims 1 and 5 and are allowable for the same reason. Reconsideration and withdrawal of this rejection are respectfully requested.

### **CONCLUSION**

All of the stated grounds of rejection have been properly traversed, accommodated or rendered moot. Applicant has made a bona fide effort to remove informalities from the specification, and to properly amend the claims, and Applicant believes that a full and complete reply has been made to the outstanding Office Action, and that the present application is in a condition for allowance. Accordingly, a Notice to that effect is most respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided. Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Dated: May 12, 2004

Respectfully submitted,



Arthur K. Samora, Reg. No. 43079  
Department of the Army  
CECOM Intellectual Property Division  
AMSEL-LG-C-BLVE  
10235 Burbeck Road  
Fort Belvoir, VA 22060-5806  
(703) 704-2227

TRANSMISSION VERIFICATION REPORT

TIME : 05/12/2004 11:32  
NAME : JOHN METCALF  
FAX : 7037042226  
TEL : 7037041793

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## TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

10

Application Number

09/879,928

Filing Date

06/14/2001

First Named Inventor

C. Ward Trussell Jr.

Art Unit

2815

Examiner Name

Warren, Matthew E.

Attorney Docket Number

NVL-3247

### ENCLOSURES (Check all that apply)

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Fee Transmittal Form                                | <input type="checkbox"/> Drawing(s)   | <input type="checkbox"/> After Allowance communication to Technology Center (TC)        |
| <input type="checkbox"/> Fee Attached  | <input type="checkbox"/> Licensing-related Papers                                       | <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences     |
| <input checked="" type="checkbox"/> Amendment/Reply                          | <input type="checkbox"/> Petition   | <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) |
| <input type="checkbox"/> After Final   | <input type="checkbox"/> Petition to Convert to a Provisional Application               | <input type="checkbox"/> Proprietary Information  |
| <input type="checkbox"/> Affidavits/declaration(s)                           | <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address | <input type="checkbox"/> Status Letter  |
| <input type="checkbox"/> Extension of Time Request                           | <input type="checkbox"/> Terminal Disclaimer  | <input type="checkbox"/> Other Enclosure(s) (please identify below):                    |
| <input type="checkbox"/> Express Abandonment Request                         | <input type="checkbox"/> Request for Refund   |   |
| <input type="checkbox"/> Information Disclosure Statement                    | <input type="checkbox"/> CD, Number of CD(s) _____                                      |   |
| <input type="checkbox"/> Certified Copy of Priority Document(s)              | Remarks   |   |
| <input type="checkbox"/> Response to Missing Parts/Incomplete Application    |   |   |
| <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 |   |   |

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name

Arthur K. Samora

Signature

Date

09/07/2004

### CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name

Gloria Carter-Perkins

Signature

Date

09/08/2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

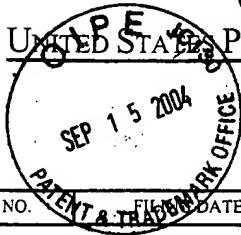
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EXHIBIT D





UNITED STATES PATENT AND TRADEMARK OFFICE



UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILED DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,928	06/14/2001	C. Ward Trussell JR.	NVL 3247	4460

7590

03/15/2004

DEPARTMENT OF THE ARMY,CECOM  
INTELLECTUAL PROPERTY DIVISION  
AMSEL LG P NVEO (MILTON LEE)  
10225 BURBECK ROAD  
FORT BELVOIR, VA 22060-5806

EXAMINER

WARREN, MATTHEW E

ART UNIT	PAPER NUMBER
----------	--------------

2815

DATE MAILED: 03/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

EXHIBIT A



Interview Summary

Application No. 09/879,928		Applicant(s) TRUSSELL JR.	
Examiner Matthew E. Warren		Art Unit 2815	

All participants (applicant, applicant's representative, PTO personnel):

- (1) Matthew E. Warren. (3) \_\_\_\_\_  
(2) Arthur Samora. (4) \_\_\_\_\_

Date of Interview: 29 April 2004.

Type: a) ☐ Telephonic b) ☐ Video Conference  
c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.  
If Yes, brief description: \_\_\_\_\_

Claim(s) discussed: 1.

Identification of prior art discussed: Fields (US 5139609), Marchitto et al. (6307059), Robertson (6039632).

Agreement with respect to the claims f) ☒ was reached. g) ☐ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Matthew E. Warren  
Examiner's signature, if required

- Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The applicant's representative discussed the 112 Rejection and showed support in the specification for the limitations in question. The examiner agreed that the specification was enabling for the limitation of a rectangular cross-section. The applicant's representative also discussed the 103 Rejection and suggested limitations with respect to the diode array laser and temperature variation that may overcome the rejection. The examiner agreed that the suggested limitations may overcome the rejection but such a determination cannot be made until further review of the submitted amendments.

## Summary of Record of Interview Requirement

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

#### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

##### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiner's Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

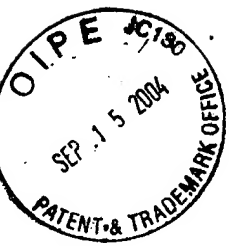
A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

#### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.



*Arthur K. Samora, Esq.*

Department of the Army  
CECOM Division C  
AMSEL-LG-C-BLVR  
10235 Burbeck Road  
Fort Belvoir, VA 22060-5806  
(703) 704-2227  
Fax (703) 704-2226

FAX TRANSMISSION COVER SHEET

*Date:* May 12, 2004  
*To:* Examiner Matthew E. Warren, Art Unit 2815  
*Fax:* (571)273-1664  
*Re:* Patent Application Serial No. 09/879,928 entitled DIODE ARRAY END  
PUMPED SLAB LASER by C. Ward Trussel, Jr.  
*Sender:* Arthur K. Samora, Registration No. 43,079, CECOM Legal Division C, Fort  
Belvoir Branch

YOU SHOULD RECEIVE 11 PAGES, INCLUDING THIS COVER SHEET. IF YOU DO  
NOT RECEIVE ALL THE PAGES, PLEASE CALL (703) 704-2227.

Mr. Warren, attached please find a Rule 111 amendment for the above-titled application. If you have any questions, please do not hesitate to contact me at the above number. Very Respectfully, Arthur K. Samora.



<b>TRANSMITTAL FORM</b>  <i>(to be used for all correspondence after initial filing)</i>	Application Number	09/879,928	
	Filing Date	June 14, 2001	
	First Named Inventor	Trussel, Jr.	
	Art Unit	2815	
	Examiner Name	Matthew E. Warren	
Total Number of Pages in This Submission	10	Attorney Docket Number	NVL-3247

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance communication to Technology Center (TC)
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input checked="" type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Terminal Disclaimer	
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s) _____	
<input type="checkbox"/> Response to Missing Parts/Incomplete Application	Remarks	
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Arthur K. Samora, Registration No. 43,079
Signature	
Date	05/12/2004

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.			
Typed or printed name	Gloria Carter-Perkins		
Signature		Date	05/12/2004

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